UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,034	08/05/2002	Preeti G. Lal	PF-0731 USN	9342

27904 7590 07/07/2004

INCYTE CORPORATION
EXPERIMENTAL STATION
ROUTE 141 & HENRY CLAY ROAD
BLDG. E336
WILMINGTON, DE 19880

EXAMINER	
BUNNER, BRIDGET E	

ART UNIT	PAPER NUMBER
1647	

DATE MAILED: 07/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,034	LAL ET AL.	
	Examiner	Art Unit	
	Bridget E. Bunner	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) *8,10,15 and 18-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9,11-14,16 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-28* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/23/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of SEQ ID NO: 28, SEQ ID NO: 65, and Group A, claims 1-7, 9, 11-14, and 16-17, drawn to an isolated polypeptide, an isolated polynucleotide, a recombinant cell, a method for producing the polypeptide, and a method for detecting a target polynucleotide in the reply filed on 23 April 2004 is acknowledged. The traversal is on the ground(s) that unity of invention exists among all of Applicant's claims. Applicant argues that the claimed polypeptide sequences and the claimed polynucleotide sequences encoding them are corresponding technical features which are common to all of Applicant's claims, which serve to interrelate all of Applicant's claims, and which define the contribution over the prior art made by each of them. Applicant asserts that the claims are linked to form a single general inventive concept and Applicant is therefore entitled to prosecute all of the pending claims in a single national stage application. This is not found persuasive. It is noted that since the instant application was filed under 35 U.S.C. § 371, the Examiner made a lack of unity requirement in the previous Office Action (23 March 2004). As discussed in the previous Office Action, the claims broadly encompass the polypeptide sequences of SEQ ID NOs: 1-2, 4-16, 18-25, or 27-37 and the polynucleotide sequences of SEQ ID NOs: 38-39, 41-53, 55-62, or 64-74. However, each of the amino acid and nucleic acid sequences lack the same special technical feature. For example, each of the amino acid sequences of are different lengths, composed of different amino acids, and are structurally and functionally unrelated, each to each other. Similarly, the polynucleotide sequences are different lengths, composed of different nucleic acids, and are structurally and functionally unrelated, each to each other. The nucleic acid sequence imparts

structural and functional differences in each gene which affect properties such as expression levels, tissue specific expression patterns, mRNA half lives, cellular localization of the gene product, etc. Each gene encodes a different protein product which is not sufficiently linked by structural or functional features. Each polypeptide and polynucleotide sequence is a unique sequence, requiring a unique search of the prior art. Searching all of the sequences in a single patent application would provide an undue search burden on the examiner and the USPTO's resources because of the non-coextensive nature of these searches.

Furthermore, although Applicant asserts that the claimed polypeptide and polynucleotide sequences interrelate all of the Applicant's claims, the inventions listed as Groups A-N in the previous Office Action do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features. For example, Group C recites the technical feature of an isolated antibody, which is not required by the other products. Group E recites the technical feature of administering a polypeptide composition to a patient, which is not required by the other methods.

The requirement is still deemed proper and is therefore made FINAL.

Claims 8, 10, 15, and 18-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected groups, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 23 April 2004.

Claims 1-7, 9, 11-14, and 16-17 are under consideration in the instant application as they read upon the elected polypeptide sequence of SEQ ID NO: 28 and the polynucleotide sequence of SEQ ID NO: 65.

Specification

1. The disclosure is objected to because of the following informalities:

2. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code (For example, see page 16, lines 4 and 8; page 55, line 14; page 63, line 9). Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "A MEMBRANE ASSOCIATED PROTEIN, A NUCLEIC ACID MOLECULE ENCODING THE PROTEIN, AND METHOD OF DETECTION".

Appropriate correction is required.

Claim Objections

4. Claims 1-2, 5, 11, and 17 are objected to because of the following informalities:

4a. Claims 1-2, 5, 11, and 17 recite non-elected groups of sequences.

4b. Claim 7 recites a non-elected group (specifically, Group B, a host cell and a transgenic organism). It is noted that this objection can be overcome by amending the claim to recite "a recombinant host cell..." or "an isolated host cell...".

Appropriate correction is required.

Claim Rejections - 35 USC § 101 and 35 USC § 112, first paragraph

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-7, 9, 11-14, and 16-17 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a credible, specific, or substantial asserted utility or a well established utility. Novel biological molecules lack established utility and must undergo extensive experimentation.

Claims 1-2 and 16-17 are directed to an isolated polypeptide comprising an amino acid sequence selected from the group consisting of : a) an amino acid sequence consisting of SEQ ID NO: 28, b) a naturally occurring amino acid sequence having at least 70% sequence identity to the amino acid sequence of SEQ ID NO: 28, c) a biologically active fragment of the amino acid sequence of SEQ ID NO: 28, and d) an immunogenic fragment of the amino acid sequence of SEQ ID NO: 28. Claims 3-6 and 11 recite an isolated polynucleotide encoding a polypeptide, an isolated polynucleotide consisting of SEQ ID NO: 65, and a naturally occurring polynucleotide sequence having at least 90% sequence identity to the polynucleotide of SEQ ID NO: 65. Claims 7 and 9 recite a cell transformed with the recombinant polynucleotide and a method for producing a polypeptide. Claim 12 recites an isolated polynucleotide comprising at least 60 contiguous nucleotides of SEQ ID NO: 65. Claims 13-14 are directed to a method for detecting a target polynucleotide in a sample.

The specification discloses that the claimed polypeptide and polynucleotide are referred to as a membrane associated protein, specifically, MEMAP-28 (pg 5, lines 10-17). The

specification teaches that MEMAP refers the amino acid sequences of substantially purified MEMAP obtained from any species (pg 11, lines 3-5) and that "biologically active" refers to a protein having structural, regulatory, or biochemical functions of a naturally occurring molecule (pg 13, lines 2-3). The specification teaches that MEMAP "appears to play a role in cell proliferative, autoimmune/inflammatory, neurological, and gastrointestinal disorders (pg 36, lines 29-30). However, the instant specification does not teach any significance or functional characteristics of the MEMAP-28 polynucleotide or polypeptide. The specification also does not disclose any methods or working examples that indicate MEMAP-28 is involved in any activity or disorder. The specification asserts the following as patentable utilities for the claimed putative MEMAP polypeptide (SEQ ID NO: 28) and polynucleotide (SEQ ID NO: 65):

1) to diagnose cell proliferative, autoimmune/inflammatory, neurological, and gastrointestinal disorders (pg 23, lines 34-35; pg 24, line 1; pg 49-52)

2) to generate a chimeric or variant MEMAP protein (pg 25, line 35; pg 26, lines 1-16; pg 34, lines 8-30)

3) to screen for compounds that specifically bind to MEMAP (pg 34, lines 31-35; pg 35, lines 1-18)

4) to screen for compound that modulate the activity of MEMAP (pg 35, lines 19-29)

5) to create "knockin" animals or transgenic animals (pg 35, lines 30-35; pg 36, lines 1-24)

6) to treat or prevent a disorder associated with decreased expression or activity of MEMAP (pg 36, lines 34-35, pg 37 through pg 38, lines 1-25; pg 41, lines 14-35; pg 42-44)

7) to generate antibodies (pg 39, lines 10-35 through pg 41)

8) to generate ribozymes (pg 45, lines 31-35)

9) to assess the toxicity of a test compound (pg 55; lines 16-22; pg 56. lines 25-32)

10) to generate hybridization probes (pg 57, lines 12-25)

11) in chromosome mapping (pg 57, lines 26-35; pg 58, lines 1-7)

Each of these shall be addressed in turn.

1) to diagnose cell proliferative, autoimmune/inflammatory, neurological, and gastrointestinal disorders. This asserted utility is not specific or substantial. The specification does not disclose specific disorders associated with a mutated, deleted, or translocated MEMAP polynucleotide (SEQ ID NO: 65) or polypeptide (SEQ ID NO: 28). Significant further experimentation would be required of the skilled artisan to identify individuals with such a disease. Further, the specification discloses nothing about the normal levels of expression of the polynucleotide or polypeptide. The altered or abnormal levels of the polynucleotide or polypeptide cannot be determined until a baseline control level is established. Since this asserted utility is also not present in mature form so that it could be readily used in real world sense, the asserted utility is not substantial.

2) to generate a chimeric or variant MEMAP protein. This asserted utility is not specific or substantial. Such assays can be performed with any polypeptide or polynucleotide. Further, the specification discloses nothing specific or substantial for the variant polypeptide that is produced by this method. Since this asserted utility is also not present in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

3) to screen for compounds that specifically bind to MEMAP. This asserted utility is not specific or substantial. Such assays can be performed with any polypeptide. Additionally, the specification discloses nothing specific or substantial for the compounds that can be identified by

this method. Since this asserted utility is also not present in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

4) to screen for compound that modulate the activity of MEMAP. This asserted utility is not specific or substantial. Such assays can be performed with any polypeptide. Nothing is disclosed about how the polypeptide or a specific function of the polypeptide is affected by the compounds. Additionally, the specification discloses nothing specific or substantial for the compounds screened in this method. Since this asserted utility is also not presented in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

5) to create "knockin" or "knockout" animals or transgenic animals. This asserted utility is not specific or substantial. The specification does not disclose diseases associated with a mutated, deleted, or translocated MEMAP polynucleotide (SEQ ID NO: 65) or polypeptide (SEQ ID NO: 28). Significant further experimentation would be required of the skilled artisan to identify such a disease. The specification discloses nothing about whether the gene will be "knocked in" or "knocked out" or what specific tissues and cells are being targeted. Since this asserted utility is also not present in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

6) to treat or prevent a disorder associated with decreased expression or activity of MEMAP. This asserted utility is not specific or substantial. Such can be performed for any polynucleotide or polypeptide. Further, the specification does not disclose diseases associated with a mutated, deleted, or translocated MEMAP polynucleotide (SEQ ID NO: 65) or polypeptide (SEQ ID NO: 28). Significant further experimentation would be required of the skilled artisan to identify individuals with such a disease and to determine the route of

administration of the gene or protein, as well as quantity and duration of treatment. Since this asserted utility is also not presented in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

7) to generate antibodies. This asserted utility is not specific or substantial. Antibodies can be made to any polypeptide. However, if the specification discloses nothing specific and substantial about the polypeptide, therefore both the polypeptide and its antibodies have no patentable utility.

8) to generate ribozymes . This asserted utility is not specific or substantial. Antibodies can be made to any polypeptide. This asserted utility is not specific or substantial. Ribozymes can be designed from any DNA/RNA sequence. Additionally, the specification does not disclose a specific DNA/RNA target. Since this asserted utility is also not present in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

9) to assess the toxicity of a test compound. This asserted utility is not specific or substantial. Such assays can be performed with any polypeptide. Nothing is disclosed about how the polypeptide or a specific function of the polypeptide is affected by the compounds. Additionally, the specification discloses nothing specific or substantial for the compounds screened in this method. Since this asserted utility is also not presented in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

10) to generate hybridization probes. This asserted utility is not specific or substantial. Hybridization probes can be designed from any polynucleotide sequence. Further, the specification does not disclose specific cDNA, DNA, or RNA targets. Since this asserted utility

is also not present in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

11) in chromosome mapping. This asserted utility is not specific or substantial. Such assays can be performed with any polynucleotide. Further, the specification does not disclose a specific DNA target. (Furthermore, the asserted patentable utility of a chromosomal marker or to detect chromosomal aberrations for the claimed MEMAP nucleic acid molecule is not substantial because one skilled in the art would not readily use the nucleotide sequences since they are not associated with a specific disease-related gene. Since this asserted utility is also not present in mature form, so that it could be readily used in a real world sense, the asserted utility is not substantial.

6. Claims 1-7, 9, 11-14, and 16-17 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

6a. Furthermore, claims 1-7, 9, 11-14, and 16-17 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are directed to an isolated polypeptide comprising an amino acid sequence selected from the group consisting of : a) an amino acid sequence consisting of SEQ ID NO: 28,

b) a naturally occurring amino acid sequence having at least 70% sequence identity to the amino acid sequence of SEQ ID NO: 28, c) a biologically active fragment of the amino acid sequence of SEQ ID NO: 28, and d) an immunogenic fragment of the amino acid sequence of SEQ ID NO: 28. The claims also recite an isolated polynucleotide encoding a polypeptide, an isolated polynucleotide consisting of SEQ ID NO: 65, and a naturally occurring polynucleotide sequence having at least 90% sequence identity to the polynucleotide of SEQ ID NO: 65. Claim 12 also recites a polynucleotide comprising at least 60 contiguous nucleotides of the polynucleotide of SEQ ID NO: 65.

The specification teaches the term "biologically active" refers to "a protein having a structural, regulatory, or biochemical functions of a naturally occurring molecule. (pg 13, lines 2-3). The specification also teaches that "an 'immunogenic fragment' is a polypeptide or oligopeptide fragment of MEMAP which is capable of eliciting an immune response when introduced into a living organism, for example, a mammal. The term 'immunogenic fragment' also includes any polypeptide or oligopeptide fragment of MEMAP which is useful in any of the antibody production methods..." (pg 19, lines 6-10). However, the specification does not enable the claimed naturally-occurring, biologically active, or immunogenic fragments and variants of MEMAP. The specification does not disclose methods or examples to enable one skilled in the art to obtain a "natural" MEMAP or any allelic variants from other species besides humans. The specification does not disclose methods or working examples that show how to use "biologically active" fragments or that describe the specific activity associated with the fragments. An antigenic fragment of the amino acid sequence of SEQ ID NO: 28 gives rise to an antibody specific for SEQ ID NO: 28. However, an 'immunogenic fragment" of the amino acid sequence

of SEQ ID NO: 28 gives rises to an antibody that is not specific for SEQ ID NO: 28. An "immunogenic fragment" elicits a general immune response. The specification fails to teach one skilled in the art how use non-specific antibodies.

The specification also discloses that "a variant of a particular polynucleotide or polypeptide sequence is defined as a polynucleotide or polypeptide sequence having at least 40% sequence identity to that particular polynucleotide/polypeptide sequence over a certain length (pg 23, lines 9-31). However, the specification does not teach an amino acid sequence with at least 70% sequence identity to the amino acid sequence of SEQ ID NO: 28, as recited in the claims. The specification does not teach a polynucleotide sequence having at least 90% sequence identity to the polynucleotide sequence of SEQ ID NO: 65. The specification also does not disclose any polynucleotide comprising at least 60 contiguous nucleotides of SEQ ID NO: 65. Further, the specification does not teach functional or structural characteristics of the polynucleotides or polypeptides in the context of a cell or organism.

The problem of predicting protein and DNA structure from sequence data and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein and DNA is extremely complex. For example, while it is known that many amino acid substitutions are generally possible in any given protein the positions within the protein's sequence where such amino acid substitutions can be made with a reasonable expectation of success are limited. Certain positions in the sequence are critical to the protein's structure/function relationship, e.g. such as various sites or regions directly involved in binding, activity and in providing the correct three-dimensional spatial orientation of binding and active sites. These or other regions may also be critical determinants of antigenicity. These regions can tolerate only relatively conservative

substitutions or no substitutions (see Wells, 1990, Biochemistry 29:8509-8517; Ngo et al., 1994, The Protein Folding Problem and Tertiary Structure Prediction, pp. 492-495). However, Applicant has provided little or no guidance beyond the mere presentation of sequence data to enable one of ordinary skill in the art to determine, without undue experimentation, the positions in the protein and DNA which are tolerant to change and the nature and extent of changes that can be made in these positions. The art recognizes that function cannot be predicted from structure alone (Bork, 2000, Genome Research 10:398-400; Skolnick et al., 2000, Trends in Biotech. 18(1):34-39, especially p. 36 at Box 2; Doerks et al., 1998, Trends in Genetics 14:248-250; Smith et al., 1997, Nature Biotechnology 15:1222-1223; Brenner, 1999, Trends in Genetics 15:132-133; Bork et al., 1996, Trends in Genetics 12:425-427).

6b. Claims 16-17 are also directed to a composition comprising an effective amount of SEQ ID NO: 28 and variants thereof and a pharmaceutically acceptable excipient. However, the phrase "pharmaceutically acceptable excipient" in claims 16-17 recites an intended use of the MEMAP polypeptide for treatment or administration in an animal. The specification does not teach how to use a MEMAP polypeptide without undue experimentation for the treatment of a disease in an animal. There are no working examples directed to a particular disorder in an animal or administration of any MEMAP, particularly the polypeptide of SEQ ID NO: 28, to an animal for treatment. (Note, this issue could be overcome by deleting the word "pharmaceutically acceptable excipient" from the claims.)

Due to the large quantity of experimentation necessary to obtain a "natural" MEMAP polypeptide or allelic variants from another species, to determine the specific activity of a polypeptide fragment and to learn how to use non-specific antibodies, to determine an activity or property of the disclosed polypeptide such that it can be determined how to use the claimed polynucleotides encoding MEMAP-28, to generate the infinite number of derivatives recited in the claims and possibly screen same for activity, and to determine the quantity of MEMAP polypeptide to be administered, the most effective administration route, and the duration of the treatment; the lack of direction/guidance presented in the specification regarding same; the absence of working examples directed to same; the complex nature of the invention; the unpredictability of the effects of the MEMAP polypeptide *in vivo* and the state of the prior art establishing the unpredictability of the effects of mutation on protein structure and function; and the breadth of the claims which fail to recite particular biological activities and also embrace a broad class of structural fragments and variants, undue experimentation would be required of the skilled artisan to make and/or use the claimed invention in its full scope.

7. Claims 1-7, 9, 11-14, and 16-17 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are directed to an isolated polypeptide comprising an amino acid sequence selected from the group consisting of : a naturally occurring amino acid sequence having at least 70% sequence identity to the amino acid sequence of SEQ ID NO: 28 and fragments of the

amino acid sequence of SEQ ID NO: 28. The claims also recite a naturally occurring polynucleotide sequence having at least 90% sequence identity to the polynucleotide of SEQ ID NO: 65. Claim 12 also recites a polynucleotide comprising at least 60 contiguous nucleotides of the polynucleotide of SEQ ID NO: 65.

The specification teaches human a MEMAP polynucleotide and polypeptide (SEQ ID NO: 65 and SEQ ID NO: 28, respectively). The specification also discloses that "a variant of a particular polynucleotide or polypeptide sequence is defined as a polynucleotide or polypeptide sequence having at least 40% sequence identity to that particular polynucleotide/polypeptide sequence over a certain length (pg 23, lines 9-31). However, the specification does not teach functional or structural characteristics of the claimed polynucleotide and polypeptide in the context of a cell or organism. The description of one MEMAP-28 polynucleotide species (SEQ ID NO: 65) and one MEMAP-28 polypeptide species (SEQ ID NO: 28) is not adequate written description of an entire genus of functionally equivalent polynucleotides and polypeptides which incorporate all variants and fragments with at least 70% sequence identity to the amino acid sequence of SEQ ID NO: 28, at least 90% sequence identity to the polynucleotide of SEQ ID NO: 65, or at least 60 contiguous nucleotides of the polynucleotide of SEQ ID NO: 65.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed"* (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed" (See *Vas-Cath* at page 1116).

With the exception of the sequences referred to above, the skilled artisan cannot envision the detailed chemical structure of the encompassed polynucleotides and polypeptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The nucleic acid itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only an isolated polynucleotide consisting of the nucleic acid sequence of SEQ ID NO: 65, an isolated polynucleotide encoding the polypeptide of SEQ ID NO: 28, and an isolated polypeptide consisting of the amino acid sequence of SEQ ID NO:28, but not the full breadth of the claim meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 13-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. The term "specifically hybridizes" in claim 13, line 5 is a relative term which renders the claimed indefinite. The term "specifically hybridizes" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Neither the specification nor the art provide unambiguous definitions for "hybridizes" and "specifically hybridizes". Therefore, the metes and bounds of the claims cannot be determined by one skilled in the art.

10. Stringency is relative, and the art does not recognize a single set of conditions as stringent. The specification also does not provide an unambiguous definition for the term. In the absence of a recitation of clear hybridization conditions (e.g., "hybridizes at wash conditions consisting of **A** X SSC and **B** % SDS at **C**°C"), claims 13-14 fail to define the metes and bounds of the varying structures of polynucleotides recited in the claimed methods.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

11. Claim 12 is rejected under 35 U.S.C. 102(a) as being anticipated by Genbank Accession No. AI834221, The FAPESP/LICR Human Cancer Genome Project, 13 July 1999.

The sequence submitted under Genbank Accession No. AI834221 teaches an isolated polynucleotide comprising at least 60 contiguous nucleotides of the polynucleotide of SEQ ID NO: 65 of the instant specification (See sequence alignment attached to this Office Action as Appendix A; see nucleotides 2-111 of AI834221 and nucleotides 488-597 of SEQ ID NO: 65 of the instant application.)

Conclusion

No claims are allowable.

The art made of record and not relied upon is considered pertinent to applicant's disclosure:

Andrault et al. Genomics 82 : 172-184, 2003.

Mulero et al. Immunogenetics 54 : 293-300, 2002.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bridget E. Bunner whose telephone number is (571) 272-0881. The examiner can normally be reached on 8:30-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback can be reached on (571) 272-0961. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BEB
Art Unit 1647
02 July 2004

Brenda Brumback
BRENDA BRUMBACK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600